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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/623,273	10/01/2001	Kazunori Yamanaka	58799-016	3839

7590 01/23/2004  
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EXAMINER

KIM, TAE JUN

ART UNIT PAPER NUMBER

3746

DATE MAILED: 01/23/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/623,273

Applicant(s)

YAMANAKA ET AL.

Examiner

Ted Kim

Art Unit

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 5-10, 13-18, 20-22, 26 and 28-32 is/are pending in the application.
- 4a) Of the above claim(s) 13-18, 21-22 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5, 6 and 29-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. A telephone call to Keith George was made on January 20, 2004 indicating that the positions set forth in the first office action would be maintained and that applicant should take the indicated allowable subject matter. There was no agreement at that time, hence the reiteration of the previous positions.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 6, 31, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (6,253,554) in view of either JP 60-171935 of the search report or Nishijima (5,185,997). Kobayashi et al teach a gas turbine comprising a first compressor 8, a gas turbine cooling system 7 to feed the gas from the compressor to the turbine 10 where components 31a, 31b are cooled, a second compressor 33 to boost the pressure of the gases from the heat exchanger. Kobayashi et al do not teach the use of a dust filter after the heat exchanger and before the second compressor. JP '935 teaches a first compressor 2 with heat exchanger 10 and filters 11, 18 used for filtering the dust prior to cooling the turbine 7. Nishijima teaches using a dust filter 5 after the heat exchanger 4

for filtering the dust prior to cooling the turbine 2. It would have been obvious to one of ordinary skill in the art to employ dust filters following the heat exchanger of Kobayashi et al, in order to remove the dust from the cooling air. Moreover, it is noted that it is deemed obvious to use the filter either before or after the second compressor, as it is noted that the cooling air holes of the turbine are very small (see e.g. holes 22 of JP '935) and that dust in the system clogs such cooling holes, hence dust removal is desired for its enhancement and protection for the cooling system.

4. Claims 5, 29, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (6,253,554) in view of Green (2,786,341). Kobayashi et al teach a gas turbine comprising a first compressor 8, a gas turbine cooling system 7 to feed the gas from the compressor to the turbine 10 where components 31a, 31b are cooled, a second compressor 33 to boost the pressure of the gases from the heat exchanger. Kobayashi et al do not teach a liquid separating device after the heat exchanger. Note that Kobayashi teach in Fig. 15 that the cooler 16 can be followed by additional cooling 37 prior to delivery into the turbine for cooling (col. 20, lines 16+). Green teaches a jet engine having a compressor 12 where bleed air 10 is cooled in a heat exchanger 14 for cooling the compressed air 10, 17, where after the heat exchanger the air has a water separator 28 (following water injection 35, and which serves to additionally cool the air, see col. 2, lines 34+) and the cooled air 29 is available for use in the aircraft. Green teaches that the cooled air in the broad invention can be used in any space where pressurized cooling air is needed (col. 1, lines 20-28). It is noted that gas turbine engines are used in jet engines

and that it would have been obvious to one of ordinary skill in the art to use the water injector and separator following the cooler, as taught by Green, in order to further cool the air of Kobayashi prior to use in the turbine, i.e. the water injection would serve to further cool the air in a manner analogous to heat exchanger 37 in Fig. 15 of Kobayashi et al.

*Allowable Subject Matter*

5. Claims 7-10, 20, 26 are allowable.

*Response to Arguments*

6. Applicant's arguments filed 12/9/03 have been fully considered but they are not persuasive. Applicant argues that Green is non-analogous art to the Kobayashi. First, it is pointed out that jet engines are generally gas turbine engines and that Green is directed generally to taking a compressed air flow after the compressor from the aircraft engine and cooling the flow of air as well as removing the water therefrom prior to delivery to the space to receive the cooling air (see e.g. col. 1, lines 20-34). While in Green the space is, for example, a cabin, the teachings are by no means limited to a cabin.

Consequently, those of ordinary skill in the gas turbine art, including the gas turbine aircraft art, would be well versed in applying the cooling air from the compressor to not just a cabin but also to cooling the turbine. Applicant is reminded that the teachings of a reference are not limited to the preferred embodiment(s), but are applicable for what they fairly teach one of ordinary skill in the art, *In re Boe*, 148 USPQ 507 (CCPA 1966).

Evidence for this well known equivalence is cited in Walker et al (5,351,478)

“A typical aircraft gas turbine engine includes a compressor for pressurizing air which subsequently is mixed with fuel and ignited in the combustor section and the resulting combustion gases power the turbine. The compressor and turbine are surrounded by casings through which air is either extracted or distributed. Typically, a portion of the air is extracted from the compressor as bleed air and is used to cool engine parts such as the turbines, blades, bearings, and gears, as well as to supply cabin pressure to the aircraft. (col. 1, lines 8-17).”

Hence, it is the examiner’s position that it would have been obvious to one of ordinary skill in the art to apply the teachings of Green to that of Kobayashi, in view of the well known equivalence of use of that type of cooling air to a turbine as well as a cabin and that the fact that Green places no restriction on what type of system the cooling air is delivered to.

Applicant’s arguments regarding Kobayashi and either JP 60-171935 of the search report or Nishijima are not persuasive. Applicant argues that because in Nishijima and JP ‘935 the dust filters are shown after the heat exchanger but not before the second compressor, one of ordinary skill in the art would not be able to place the dust filter before or after the second compressor. The key teaching in both of these references is the placement of the dust filter after the cooling heat exchanger. In Nishijima, the placement of the filter 5 is after the heat exchanger 4. In JP ‘935 the placement of the filters 11, 18 are also after the heat exchanger. When combining with the Kobayashi reference, it is the examiner’s position that one of ordinary skill in the art would be able to place a filter downstream of the heat exchanger, and thus anywhere in that system upstream or

downstream of the second compressor. Consequently, one of ordinary skill in the art would clearly be motivated to use the dust filters of the prior art, as the turbine requires protection, regardless of whether there is an intervening/second compressor or not.

Applicant's arguments regarding Nishijima clearly state that one of ordinary skill in the art would be motivated to place the filter just upstream of the turbine (paragraph bridging pages 15-16) and thus downstream of the compressor of Kobayashi. Applicant's arguments are prima facie evidence that applicant would not consider such a placement of the dust filter patentable and consequently newly presented claim 31 should be unpatentable.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 703-308-2631. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 703-872-9306 for Regular faxes and 703-872-9306 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu, can be reached on 703-308-2675.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861.

General inquiries can also be directed to Technology Center Customer Service Office at 703-306-5648 or the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at

<http://www.uspto.gov/main/patents.htm>



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